

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/013734

International filing date (day/month/year)
02.12.2004

Priority date (day/month/year)
04.12.2003

International Patent Classification (IPC) or both national classification and IPC
A61K7/42, A61K7/00, C07F7/18, C07D263/56, C07C49/835, C07C225/22, C07D249/20, C07D249/18,

Applicant
DSM IP ASSETS B.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

10/581511

International application No.
PCT/EP2004/013734

AP20 Rec'd PCT/PTO 01 JUN 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 15-17, 19, 20, 22-24 (all part)

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 15-17, 19, 20, 22-24 (all part)
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
 - the written form ☐ has not been furnished
 - ☐ does not comply with the standard
 - the computer readable form ☐ has not been furnished
 - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
- ☐ See separate sheet for further details

**WRITTEN OPINION OF THE
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Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ not paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
 - ☐ the parts relating to claims Nos.

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-25
Inventive step (IS)	Yes: Claims	
	No: Claims	1-25
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/EP2004/013734

III. Non-establishment of opinion

A very large number of documents relevant to present claims 15-17, 19, 20 and 22-24 was found. So many documents were found that it was not possible to perform a complete and meaningful search of these claims. For this reason the following opinion is not exhaustive, as the cited prior art represents merely a selection of that relevant to claims 15-17, 19, 20 and 22-24.

IV. Lack of unity

Where a group of inventions is claimed in one and the same international application, the requirement of unity referred to in Rule 13.1 PCT shall be fulfilled only where there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art (Rule 13.2 PCT). In the present case, the only technical feature common to all the independent claims appears to be the presence of a chromophoric group. However, these chromophores are not new (see point V below), and hence this common technical feature cannot form the special technical feature required by Rule 13 PCT. No other special technical feature could be identified. There therefore appears to be a lack of unity. However, in view of the extensive lack of novelty, it does not appear at this time to be appropriate to split the invention up into unitary groups. The following examination has therefore been performed for the entire subject matter, insofar as this was possible (see point III above).

V. Reasoned statement

Reference is made to the following documents:

- D1: D1: EP-A-0 478 284 (SHIN-ETSU CHEMICAL CO., LTD) 1 April 1992 (1992-04-01)
D2: SPANGE, S. ET AL.: "A one-pot synthesis of chromophoric silicate-based xerogels." ANGEW. CHEM. INT. ED., vol. 41, no. 10, 2002, pages 1729-1732, XP002327219
D3: PANDEY, S. ET AL.: "On the microenvironments surrounding dansyl sequestered within class I and II xerogels". CHEM. MATER., vol. 12, 2000,

pages 3547-3551, XP002327240

- D4: MORAIS DE T D ET AL: "COMMUNICATIONS HYBRID ORGANIC-INORGANIC LIGHT-EMITTING DIODES" ADVANCED MATERIALS, VCH VERLAGSGESELLSCHAFT, WEINHEIM, DE, vol. 11, no. 2, 22 January 1999 (1999-01-22), pages 107-112, XP000877970 ISSN: 0935-9648
- D5: EFIMOV YU T ET AL: "SYNTHESIS OF ORGANOSILICON DERIVATIVES OF ACRYLIC ACIDS" JOURNAL OF GENERAL CHEMISTRY USSR, CONSULTANTS BUREAU. NEW YORK, US, vol. 61, no. 10 PART 2, 1 October 1991 (1991-10-01), pages 2083-2091, XP000289683
- D6: DATABASE BEILSTEIN [Online] KACHIUCHI ET AL.: XP002327220 Database accession no. 7217707
- D7: DATABASE BEILSTEIN [Online] MIRONOV ET AL.: XP002327221 Database accession no. 515138, 521986
- D8: DATABASE BEILSTEIN [Online] SHELUDYAKOV ET AL.: XP002327222 Database accession no. 920180, 521809
- D9: DATABASE BEILSTEIN [Online] VORONKOV ET AL.: XP002327223 Database accession no. 8830008
- D10: DATABASE BEILSTEIN [Online] VARMA ET AL.: XP002327224 Database accession no. 5949952
- D11: DATABASE BEILSTEIN [Online] SAMARTSEVA ET AL.: XP002327225 Database accession no. 1115032
- D12: DATABASE BEILSTEIN [Online] XP002327226 Database accession no. 1111557 & FR 2 286 862
- D13: DATABASE BEILSTEIN [Online] PASSERINI ET AL.: XP002327227 Database accession no. 162744
- D14: DATABASE BEILSTEIN [Online] BREUKELMAN ET AL.: XP002327228 Database accession no. 5086309
- D15: DATABASE BEILSTEIN [Online] CHRZASZCZEWSKA ET AL.: XP002327229 Database accession no. 2700680
- D16: DATABASE BEILSTEIN [Online] KELEMEN ET AL.: XP002327230 Database accession no. 1283047
- D17: DATABASE BEILSTEIN [Online] OHTA ET AL.: XP002327231 Database accession no. 127823
- D18: DATABASE BEILSTEIN [Online] OKA ET AL.: XP002327232 Database

- accession no. 1121647
- D19: DATABASE BEILSTEIN [Online] SORM ET AL.: XP002327233 Database accession no. 176436
- D20: DATABASE BEILSTEIN [Online] PROFFT ET AL.: XP002327234 Database accession no. 162675
- D21: DATABASE BEILSTEIN [Online] XP002327235 Database accession no. 537844 & FR 1 325 404
- D22: DATABASE BEILSTEIN [Online] ELBS ET AL.: XP002327236 Database accession no. 226966
- D23: DATABASE BEILSTEIN [Online] HALLER ET AL.: XP002327237 Database accession no. 3206755
- D24: DATABASE BEILSTEIN [Online] HANCOCK ET AL.: XP002327238 Database accession no. 2099994

Novelty

D1 discloses compounds of formulae (8) and (9) having UV absorbing capacity. These compounds are converted into their allyl ether derivatives of formulae (10), (11) or (12), optionally rearranged to give the allyl derivatives of formulae (13)-(16) and reacted with a hydrosilane having a hydrolyzable halogen atom or alkoxy group. Finally, the reaction product is subjected to e.g. a polycondensation reaction and used in a UV absorbing cosmetic composition. See e.g. example 1, in which the specific compound (I) is protected to give compound (II), which is reacted with trimethoxysilane to give the crosslinkable chromophore-containing monomer (III). This document appears to be novelty-destroying for present claims 1, 2, 4-9 and 11-25.

D2 discloses the reaction of F-substituted chromophores with 3-aminopropyltrimethoxysilane or N-methylaminopropyltrimethoxysilane, the product thereof being converted in the presence of tetraethoxysilane in a sol-gel process to give a UV-absorbing xerogel (see Table 1 and experimental part). The xerogels contain up to 20% of the organofunctionalised silane component. Scanning electron micrographs of the xerogel prepared using the chromophore 2 show that the particle size is less than 40µm. This disclosure is novelty-destroying for present claims 1-12, 15-17, 19, 20, 23 and 24.

D3 describes the reaction of N-(triethoxysilylpropyl)dansylamide with

tetraethoxysilane/H₂O/HCl to form a class II xerogel (see Experimental section). This disclosure is novelty-destroying for present claims 15, 16, 19, 20, 23 and 24.

D4 discloses crosslinkable chromophores (b), (c) and (d) which are prepared by reacting silane molecules with chromophores. These crosslinkable chromophores were copolymerized with MTEOS or TEOS in a sol-gel process. This disclosure is novelty-destroying for present claims 15-17 and 19-25.

A very large number of documents was found anticipating present claims 17, 19, 20, 23 and 24. The following is merely a selection thereof. D5 discloses crosslinkable chromophores wherein A is an acrylate (compounds IV and VII) as well as their precursors and preparation therefrom. D6 discloses a crosslinkable chromophore wherein A is a benzophenone. D7 discloses crosslinkable chromophores wherein A is an imidazole derivative. D8 discloses crosslinkable chromophores wherein A is an imidazole or benzimidazole derivative. D9 discloses crosslinkable chromophores wherein A is a triazole as well as their precursors and preparation therefrom.

A very large number of documents was found anticipating present claim 22. D10-D24 are merely a selection thereof.

Claims 1-25 do not fulfil the requirements of Article 33(2) PCT.

Inventive step

In view of their lack of novelty, claims 1-25 cannot be inventive.

Claims 1-25 do not fulfil the requirements of Article 33(3) PCT.

Industrial applicability

Claims 1-25 fulfil the requirements of Article 33(4) PCT.